

Independent claim 1 claims a platen, not a carrier head as disclosed in Doran. As set forth in claim 1, the claimed platen comprises a plurality of piezoelectric elements disposed above the platen, wherein the plurality of piezoelectric elements is capable of exerting force on a polishing belt. As set forth in Applicant's previous response, Doran discloses a wafer carrier having a plurality of piezoelectric elements that exert force on a substrate. See Doran, Fig. 3, col. 4, lines 8-50. Doran does not disclose or reasonably suggest a platen having piezoelectric elements that are capable of exerting force on a polishing belt. Unlike the Doran carrier, which risks damaging the wafer when bending the wafer substrate, embodiments of the present invention do not risk damaging the wafer via substrate bending. More particularly, embodiments of the present invention exert force on a flexible polishing belt to shape the belt, rather than the wafer, to improve performance during the CMP process.

Accordingly, independent claim 1 is submitted to be patentable under 35 U.S.C. § 102(b) over the Doran patent. Claims 2-7, each of which ultimately depends from independent claim 1, are likewise submitted to be patentable under U.S.C. § 102(b) over the Doran patent for at least the same reasons set forth above regarding independent claim 1.

Claims 1-6, 8-14, 17, 19-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,916,012 to Pant et al. (Pant) in view of U.S. Patent No. 5,888,120 to Doran. As will be fully explained below, the combination of the Pant and Doran references does not establish a *prima facie* case of obviousness against the subject matter defined in claims 1-6, 8-14, 17, 19-23.

Pant discloses a platen that utilizes air to exert pressure below the polishing belt, but, as the Examiner has noted, Pant does not disclose the use of piezoelectric elements for exerting pressure on the polishing belt. Doran discloses a wafer carrier having piezoelectric elements that exert force on the substrate. See Doran, Fig. 3, col. 4, lines 8-50. Doran does not disclose or

reasonably suggest a platen having piezoelectric elements that are capable of exerting force on a polishing belt.

Neither the Pant reference nor the Doran reference discloses a platen having piezoelectric elements. Further, the combination of the Pant and Doran references does not achieve the claimed invention. As stated above, the Pant reference discloses a platen that utilizes air to exert pressure below the polishing belt. However, as stated in the present application, the piezoelectric elements of a platen of the embodiments of the present invention greatly reduce the amount of air needed during the CMP process. Page 6, lines 1-3. Moreover, a CMP process using the piezoelectric elements of the present invention is not as sensitive to conditions as conventional CMP processes utilizing air bearings, such as the Pant reference. Unlike air bearings, the force exerted by the piezoelectric elements of the embodiments of the present invention does not experience as great a variance as experienced by air bearings when the gap between the polishing pad and the platen varies. Thus, if the polishing pad is pushed toward the platen in one area, the force exerted on the polishing belt by other piezoelectric elements is not as affected as other areas would be when utilizing an air bearing. Page 6, lines 4-11.

Doran also does not teach utilizing piezoelectric elements on the platen to flex the polishing belt. As mentioned above, Doran discloses a wafer carrier having piezoelectric elements that exert force on the substrate, which risks damaging the wafer when bending the wafer substrate. Unlike Doran, embodiments of the present invention do not risk damaging the wafer via substrate bending.

It is not obvious under §103(a) to replace air slits on the platen disclosed in Pant with the wafer carrier piezoelectric elements disclosed in Doran. At the outset, the piezoelectric elements disclosed in the Doran reference are not present on a platen, as are the air slits of the Pant reference. Moreover, the wafer carrier piezoelectric elements of Doran are utilized for a

completely different purpose than the Pant platen air slits. In particular, the piezoelectric elements of the Doran reference are used to bend the wafer, which is completely different from shaping the polishing belt, as taught in Pant. As stated in the Pant reference: “the fluid pressure adjustments in the present invention are performed to compensate for the flexibility of the belt, the linear translation of the belt across the wafer surface and any other irregularities introduced.” Thus, there is no suggestion to replace the Pant platen air slits with the wafer carrier piezoelectric elements of Doran by combining the references. Furthermore, the Doran reference teaches away from the use of air to compensate for non-uniformity as disclosed in Pant, as described below.

It is improper to combine references where the references teach away from their combination. In particular, the Doran reference states: “air-pressure can be applied “behind” the wafer to effectively bow the wafer outward from the wafer carrier surface. This action is performed in an attempt to compensate for polishing non-uniformity. The fundamental problem with this method is that air is compressible fluid and the resulting “bubble” of air behind the wafer cannot be contained....No back-pressure setting could be applied to completely compensate for the polish pad rebound effect.” (Doran, col. 2, lines 44-53). The Doran reference specifically excludes the use of air to compensate for non-uniformity. Hence, the Doran reference teaches away from the combination of Pant and Doran.

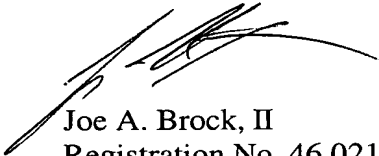
Accordingly, independents claim 1 and 8 are submitted to be patentable under 35 U.S.C. § 103(a) over the Pant patent in view of the Doran patent. Claims 2-6 and 9-16, each of which ultimately depends from independent claims 1 and 8 respectively, are likewise submitted to be patentable under U.S.C. § 103(a) over the Pant patent in view of the Doran patent for at least the same reasons set forth above regarding independent claims 1 and 8.

Independent claims 17, 21, 24, and 27 are submitted to be patentable under 35 U.S.C. § 103(a) over Pant in view of Doran and Tietz for at least the same reasons as set forth above with respect to independent claims 1 and 8. Claims 18-20, 22-23, 25-26, and 28, each of which

ultimately depends from independent claim 17, 21, 24, and 27, respectively, are likewise submitted to be patentable under U.S.C. § 103(a) over Pant in view of Doran and Tietz for at least the same reasons set forth above regarding independent claim 1 and 8.

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of claims 1-28, and submit that these claims are in condition for allowance. Accordingly, a notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at **(408) 749-6900 x6920**. If any fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. LAM2P220C). A copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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